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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/525,174

Applicant(s)

VERDONCK, BERT LEO ALFONS

Examiner

Seyed Azarian

Art Unit

2624

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 November 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-18 is/are allowed.
- 6) ☒ Claim(s) 1-3,9 and 19-22 is/are rejected.
- 7) ☒ Claim(s) 4-8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 February 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB08)
- Paper No(s)/Mail Date 11/28/2005
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

RESPONSE TO AMENDMENT

1. Applicants' arguments filed, 11/6/2008, see page 9 through page 12, of remark, with respect to amended claims 19-22 have been fully considered but they are moot in view of the new ground (s) of rejection as necessitated by applicant's amendment is made.

In brief telephone interview with applicant representative Examiner suggested ways to clarify the independent claim that may overcome the prior art, but agreement was not reached.

Applicant argues in essence regarding claim 1 that Johnson does not teaches or suggest "determining a reference direction in each cross sectional slice or creating the object data set with cross sectional slices, each cross sectional slice being orientated so that the reference directions in the cross sectional slices are aligned.

Contrary to the applicant's assertion, the Examiner indicate that Johnson discloses (column 13, lines 35-47, positioning along the midline can also be controlled by selecting points in the reformatted 2D images themselves. As described above in FIG. 4, two of these cross sections are "aligned" with the colon midline. Selection of points away from the longitudinal center of these images causes the view point to move at an equivalent distance along the midline. In this way, the plane of the other cross section can be manipulated to traverse features seen in these images. This same method of selecting new view points can be used to rapidly scan a region of the colon. When points are iteratively selected at the same position on the screen, the view point progresses along the colon midline. The speed of this progress is determined by the

distance between the selected point and the center of the view. Also column 14, lines 26-56, additionally, the view "direction" is represented and can be controlled in the navigational scouts. A bold fiducial mark such as a dot marks the current view point in these projections. A line segment extending from this point in the direction of the center of the rendered view is also shown. By manipulating the orientation of this indicator in the rendered scout, the radiologist can control the view direction with clear external reference points. Several interactive features are available, including window and level settings, orientation of the 3D camera angle, and zoom adjustment of the 3D camera. The observer can choose which area of the colon to inspect by choosing a point on the extra luminal renderings of the colon or on the two straightened images of the colon. A measurement in millimeters from the anal verge is also displayed. Another feature allows the observer to inspect the entire colon wall surface. Using the reformatted 2D image, the observer can choose a slice of the colon wall to display as the straightened image. By sequentially rotating the orientation of the slice in either a clockwise or counterclockwise direction, the entire colon wall can be evaluated).

Contrary to the applicant's assertion, as he pointed out that claim 1 relates to "a dual display mode in which images of a structure at two different positions are simultaneously displayed for a series of viewpoints".

The applicant is respectfully reminded that, it is noted that the features upon which applicant relies, are not recited in the rejected claim(s).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 9 and 19-22, are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson et al (U.S. patent 6,928,314) in view of Mistretta Patten Application Publication (U.S. patent 2003/0060698).

Regarding claim 1, Johnson discloses a method of producing an object data set describing a straightened reformat from an original object data set containing an elongated subject (column 10-, lines 6-16, the "elongated" pictures at the bottom of the display are images of the "straightened" colon showing the entire length of the delineated colon);

from which an initial cross sectional slice is created transverse to the elongated subject and at least one further cross sectional slice is created transverse to the elongated subject (column 3, lines 34-49, a colon midline is defined which follows the colon lumen. The computer workstation supports colon midline definition by generating and displaying reformatted cross-sectional images, volume rendered scouts, and interluminal views. Semi-automatic midline defining tools are also included. After the midline is defined, a montage of images is displayed for diagnostic purposes. The images include axial sections, transluminal cross section, and intraluminal volume rendered image);

determining a reference direction in each cross sectional slice, each cross sectional slice orientated so that the reference directions in the cross sectional slices are aligned (column 14, lines 26-32, additionally, the view direction is represented and can be controlled in the navigational scouts. A bold fiducial mark such as a dot marks the current view point in these projections. A line segment extending from this point in the direction of the center of the rendered view is also shown. By manipulating the orientation of this indicator in the rendered scout, the radiologist can control the view direction with clear external "reference" points. Further lines 45-56, another feature allows the observer to inspect the entire colon wall surface. Using the reformatted 2D image, the observer can choose a slice of the colon wall to display as the straightened image. By sequentially rotating the orientation of the slice in either a clockwise or counterclockwise direction, the entire colon wall can be evaluated).

However Johnson discloses (column 14, lines 26-32, additionally, the view direction is represented and can be controlled in the navigational scouts. A bold fiducial mark such as a dot marks the current view point in these projections. A line segment extending from this point in the direction of the center of the rendered view is also shown. By manipulating the orientation of this indicator in the rendered scout, the radiologist can control the view direction with clear external "reference" points. Further lines 45-56, another feature allows the observer to inspect the entire colon wall surface. Using the reformatted 2D image, the observer can choose a slice of the colon wall to display as the straightened image. By sequentially rotating the orientation of the slice in either a clockwise or counterclockwise direction, the entire colon wall can be evaluated),

but does not explicitly state its corresponding "creating the object by concatenating the slices". On the other hand Mistretta in the same field of diagnosis teaches (Structures outside the corresponding sub region (slices) are masked out of the resulting sub region image. As indicated at process block 280, the successive sub region images are then concatenated together and displayed as a single image that encompasses the entire prescribed subject field of view).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Johnson invention according to the teaching of Mistretta because combination of Johnson system for analyzing structures of the human body such as different image of digestive and Mistretta's teaching of concatenating the MRI images providing improved diagnostic information when viewed with corresponding intraminal 3D images that allow fast interactive evaluation.

Regarding claim 2, Johnson discloses the method as in claim 1, wherein determining the reference direction in each cross sectional slice comprises determining an initial reference direction in the initial cross sectional slice, deriving the reference directions in the at least one further cross sectional slices from the initial reference direction by propagation (see claim 1, also column 22, lines 5-31, a desired 3-dimensional view and/or cross-sectional views for the supine scan are displayed. Synchronously, a desired 3-dimensional view and/or cross-sectional views for the prone scan are displayed in box 148. In box 150, the system is to determine whether the imaging operation is done. If yes, the imaging operation ends in box 152. If no, the system determines whether a user has requested to switch the display from the dual

scan displaying mode to the single displaying mode in box 154. If no, the imaging operation goes back to box 144. If a switch request is requested, the system switches to a single scan displaying mode on the left side of FIG. 18 starting with box 156. Likewise, if the system "initially" determines that a user requests a single scan displaying mode in box 142, the system goes to execute box 156. In box 156, the system interactively scrolls through stack of enlarged tomograms. A desired 3-dimensional view and/or cross sectional views are displayed in box).

Regarding claim 3, Johnson discloses the method as in claim 2, wherein the determined initial reference direction is propagated directly into each of the at least one further slice (column 14, lines 26-32, additionally, the view direction is represented and can be controlled in the navigational scouts. A bold fiducial mark such as a dot marks the current view point in these projections. A line segment extending from this point in the direction of the center of the rendered view is also shown. By manipulating the orientation of this indicator in the rendered scout, the radiologist can control the view direction with clear external "reference" points. Further lines 45-56, another feature allows the observer to inspect the entire colon wall surface. Using the reformatted 2D image, the observer can choose a slice of the colon wall to display as the straightened image. By sequentially rotating the orientation of the slice in either a clockwise or counterclockwise direction, the entire colon wall can be evaluated).

Regarding claim 9, Johnson discloses the method as in claim 1, further comprising: displaying object data set describing the straightened reformat (column 3, lines 34-49, a colon midline is defined which follows the colon lumen. The computer

workstation supports colon midline definition by generating and displaying reformatted cross-sectional images, volume rendered scouts and interluminal views).

With regard to claims 19-22, the arguments analogous to those presented above for claims 1, 2, 3 and 9 are respectively applicable to claims 19-22.

Allowable Subject Matter

Claims 4-8 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

REASONS FOR ALLOWANCE

4. The following is an examiner's statement of reasons for allowance.

This invention relates generally, to a method for producing an object data set describing a straightened reformat from an original object data set containing an elongate subject, from which an initial cross sectional slice is created transverse to the elongate subject and at least one further cross sectional slice is created transverse to the elongate subject.

Claims 12-18 are allowed.

Based on applicant's amendment, with respect to claim 12, representative of claim 13 the closest prior art of record (Johnson and Mistretta), Johnson reference is directed to anatomical modeling of the human body with a computer, and more particularly to a computerized system for analyzing tubular structures of the human body such as the digestive tract of a living person for detecting colorectal polyps. Mistretta reference is directed to magnetic resonance imaging ("MRI"), and particularly,

studies which extend over a field of view which is larger than the static field of view of the MRI system. One such study is magnetic resonance angiography of human vasculature using contrast agents, but do not teach or suggest, among other things, "determining a plurality of reference directions corresponding to the plurality of cross sectional slices, including determining an initial reference direction associated with an initial cross sectional slice of the plurality of cross sectional slices and deriving reference directions corresponding to remaining cross sectional slices of the plurality of cross sectional slices from the initial reference direction by propagation; concatenating the plurality of cross sectional slices; and aligning the plurality of reference directions corresponding to the plurality of cross sectional slices, wherein the plurality of cross sectional slices form a consecution of successive cross sectional slices, and the reference directions corresponding to the remaining cross sectional slices are each derived from the reference direction corresponding to a preceding cross sectional slice by propagation.

Additionally claim 16, the closest prior art of record (Johnson and Mistretta) do not teach or suggest, among other things, "creating an initial cross sectional slice and at least one further cross sectional slice transverse to the elongated subject; determining a reference direction in each cross sectional slice; concatenating the cross sectional slices; and aligning the cross sectional slices within the object data set describing the straightened reformat in such a way that the respective reference directions are at the same angular orientation within the object data set".

These key features in combination with the other features of the claimed invention are neither taught nor suggested by (Johnson and Mistretta) prior art of record.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Contact Information

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seyed Azarian whose telephone number is (571) 272-7443. The examiner can normally be reached on Monday through Thursday from 6:00 a.m. to 7:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehta Bhavesh, can be reached at (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application information Retrieval (PAIR) system. Status information for published application may be obtained from either Private PAIR or Public PAIR. Status information about the PAIR system, see [http:// pair-direct.uspto.gov](http://pair-direct.uspto.gov). Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*/Seyed Azarian/
Primary Examiner, Art Unit 2624
Group Art Unit 2624
January 6, 2009*